

IN THE SPECIFICATION

Page 1, lines 5-7 have been amended as follows:

The present invention relates to energy conversion and more particularly to an apparatus [[of]] for converting ocean wave energy into electric power with improved characteristics.

Page 1, lines 9-24 have been amended as follows:

[[As]] It is known that waves wave can move up and down or back and forth [[in]] with a curving motion. Ocean wave power plant is thus plants have been developed by placing a power generator unit on a float in the sea. Electricity is generated by the generator by absorbing energy of waves as the waves continuously move therethrough. Conventionally, a hydraulic turbine or gas turbine is installed in a ocean wave power generator. A turbine is a rotary device per se. This gives an impression to people that electricity can be generated only by a turbine or the like. The prior turbine based electricity generation suffered from several disadvantages. For example, energy of waves is converted into high pressure liquid or air which in turn impinges the vanes of a hydraulic turbine or gas turbine for rotating the same. Finally, the generator is driven by the hydraulic turbine or gas turbine for generating electricity. Such multiple energy conversions can consume energy significantly, i.e., lower energy conversion efficiency. Further, [[it]] they can complicate the electric generation system, resulting in an increase in the installation and maintenance costs. Furthermore, the turbine can be eliminated for simplifying construction as viewed by the present inventor.

Page 1, line 25 through page 2, line 13 have been amended as follows:

Other prior art have been found in a search as below. For example, U.S. Pat. No. 4,178,517 disclosed a process for conversion of ocean wave energy into electric power and an apparatus in which wave motion is used to vary the pressure of hydrogen gas in one of the cavities of a two-cavity chamber. The resulting imbalance of pressures in the cavities is relieved by conduction of hydrogen ions through a protonic conductor separating the cavities, and by conduction of electrons through an external circuit, enabling hydrogen gas to be formed on the low-pressure side of the chamber. The conduction of electrons constitutes an electric current. Also, U.S. Pat. No. 5,136,173 disclosed an ocean wave energy conversion system in which electricity is generated by flowing sea water through a magnet hydrodynamic electric generator. Both prior arts patents have the generator installed under sea level. This is not desirable as viewed by the present inventor. Moreover, the present

~~invention is still distinguished from both prior art even they also do not employ the turbine as the present invention.~~

Thus, continuing improvements in the exploitation of the conversion of ocean wave energy into electric power are constantly being sought.

Page 2, line 15 through page 3, line 4 have been amended as follows:

It is an object of the present invention to provide an apparatus [[of]] for converting ocean wave energy into electric power. A, comprising a floating section comprising includes a float adapted to ride on the surface of the ocean in reciprocal vertical motion in response to ocean wave front action [[,]] and a lever adapted to ride on the surface of the ocean. The [[, the]] lever having has one end coupled to the float. A; and a fixed section is mounted on a seacoast, ship, or production platform and comprising includes a fulcrum for pivotably pivotally supporting the lever. A [[, a]] magnet is coupled to the other end of the lever and moveable therewith. A [[, a]] plurality of parallel stator cores together with the magnet form for forming a magnetic circuit. An, a plurality of parallel electric coils each coil is wound on each of the corresponding core, resilient stator cores. Resilient means are adjacent the magnet and interconnected to the lever and the magnet. A barrier is, a plurality of barriers each disposed between [[two]] adjacent ones of the stator cores. An, and support means, whereby an upward motion of the float caused by the impact of waves will move the magnet downward by the leverage of the lever and will compress the resilient means. Downward, a downward motion of the float will move the magnet upward by the leverage of the lever and expand the resilient means. Repetition and repeating of the upward and the downward movements of the magnet will induce a voltage in the electric coils.

Page 3, lines 5-19 have been amended as follows:

It is another object of the present invention to provide an apparatus [[of]] for converting ocean wave energy into electric power. Support, comprising support means are mounted on a fixed section mounted on a dam, seacoast, or breakwater. An [[, an]] intermediate vibration member having has a lower portion submerged in the seawater. The intermediate [[, the]] vibration member including includes a driving shaft rotatably coupled to the support means. A [[, a]] magnet is on top of the vibration member. A [[, a]] plurality of parallel stator cores together with the magnet form for forming a magnetic circuit. An, a plurality of parallel electric coils each coil is wound on each of the corresponding core,

~~left stator cores. Left~~ and right resilient means ~~are disposed~~ adjacent the ~~magnet vibration member~~ and coupled to the intermediate vibration member. ~~A barrier is , and a plurality of barriers each~~ disposed between [[two]] adjacent ~~ones of the stator~~ cores, whereby a ~~vibration . Sideways movement~~ of the vibration member caused by the impact of waves will compress ~~one of the left~~ resilient means ~~and expand while expanding~~ the ~~right other~~ resilient means via the driving shaft so as to move the magnet, ~~, and repeating of the movement~~ ~~Repetition of sideways movements~~ of the magnet will induce a voltage in the electric coils.

Page 3, line 24 through page 4, line 1 have been amended as follows:

FIG. 1 schematically depicts a top plan view of a first preferred embodiment of ~~an~~ ocean wave energy conversion apparatus according to the invention;

FIG. 2 schematically depicts a front view of the apparatus shown in FIG. 1;

FIG. 3 schematically depicts a front view of a second preferred embodiment of ~~an~~ ocean wave energy conversion apparatus according to the invention;

Page 4, lines 4-6 have been amended as follows:

FIG. 5 schematically depicts a top plan view of electrically connecting an external power source to the coil for providing ~~an~~ additional magnetic field according to the invention.

Page 4, lines 8-20 have been amended as follows:

Referring to FIGS. 1 and 2, there is shown an apparatus constructed in accordance with a first preferred embodiment of the invention. The apparatus comprises a float 4 adapted to ride on the surface of the ocean in reciprocal vertical motion in response to ocean wave front action, and a lever 5 also adapted to ride on the surface of the ocean. ~~The [[, the]]~~ lever 5 ~~having has~~ one end coupled to the float 4. On a seacoast, ship, or production platform, the apparatus further comprises a fulcrum 6 ~~for pivotably pivotally~~ supporting the lever 5. ~~A [[, a]]~~ magnet 1 ~~is~~ coupled to the other end of the lever 5. ~~A [[, a]]~~ plurality of (three ~~shown~~) parallel ~~stator~~ cores 2 together with the magnet 1 ~~for forming form~~ a magnetic circuit. ~~A [[, a]]~~ plurality of (three ~~shown~~) parallel electric coils 3 [[each]] ~~are~~ wound on the ~~stator cores~~ [[core]] 2. ~~A [[, a]]~~ spring 7 ~~is located~~ adjacent the magnet 1 ~~and~~ interconnected ~~to~~ the lever 5 and the magnet 1. ~~Each of [[,]]~~ a plurality of barriers 8 [[each]] ~~is~~ disposed between [[two]] adjacent ~~ones of the stator~~ cores 2, ~~and a support mechanism (not shown)~~.

Page 4, line 21 through page 5, line 3 have been amended as follows:

The characteristics of the first preferred embodiment are detailed below. The conventional hydraulic turbine or gas turbine is not provided. In operation, ~~an~~ upward motion of the float 4 caused by the impact of waves will cause the magnet 1 to move downward by the leverage of the lever 5 and ~~compress~~ compresses the spring 7 simultaneously. Further, a downward motion of the float 4 will cause the magnet 1 to move upward by the leverage of the lever 5 and ~~expand~~ expands the spring 7 simultaneously. Such reciprocal motion of the magnet 1 will induce a voltage (i.e., current) in the coils 3 since the coils 3 cut lines of magnetic flux (i.e., magnetic flux change). As a result, electricity is generated by ocean wave energy.

Page 5, lines 4-15 have been amended as follows:

Referring to FIGS. 3 and 4, there is shown an apparatus constructed in accordance with a second preferred embodiment of the invention. The apparatus comprises a support mechanism 9 mounted on a seacoast, dam, or breakwater. A [[, a]] vibration member 10 having has a lower portion submerged in the seawater. The [[, the]] vibration member 10 including includes a driving shaft 11 rotatably coupled to the support mechanism 9. A [[, a]] magnet 1 is located on top of the vibration member 10. A [[, a]] plurality of (three shown) parallel stator cores 2 are on top of the support mechanism 9. The stator [[, the]] cores 2 together with the magnet 1 for forming form a magnetic circuit. A [[, a]] plurality of (three shown) parallel electric coils 3 are wound on the stator cores 2. A [[, a]] left spring 71 and a right spring 72 ~~both adjacent the vibration member 10 and are~~ coupled to the intermediate vibration member 10, with the intermediate vibrator member 10 being intermediate the springs 71 and 72. Each of [[and]] a plurality of barriers 8 [[each]] is disposed between [[two]] adjacent ones of the stator cores 2. As shown, the springs 71 and 72 act between the intermediate vibration member 10 and the parts 13 of the support mechanism 9.

Page 5, lines 16-24 have been amended as follows:

The characteristics of the second preferred embodiment are detailed below. Also, the conventional hydraulic turbine or gas turbine is not provided. In operation, ~~a vibration movement~~ of the vibration member 10 ~~caused by the impact of waves in one direction~~

about the axis of the driving shaft 11 will compress the left spring 71 and expand the right spring 72 simultaneously ~~via the transmission of the driving shaft 11~~. Movement of the vibration member 10 in the opposite direction will compress the right spring 72 and expand the left spring 71 simultaneously. In ~~And in~~ turn, the magnet 1 moves. Such reciprocal motion of the magnet 1 will induce a voltage (i.e., current) in the coils 3 since the coils 3 cut the lines of magnetic flux (i.e., magnetic flux change). As a result, electricity is generated by ocean wave energy.

Page 5, line 25 through page 6, line 8 have been amended as follows:

According to Faraday's law of induction, the induced voltage is proportional to the number of coil turns. However, the electrical resistance is also proportional to the number of coil turns. Hence, it is preferably preferable to increase the diameter of the coil for significantly reducing the electrical resistance as the number of coil turns increases. Moreover, the induced voltage is also proportional to the magnetic flux change in the coil. Also, the magnetic flux is proportional to the magnetic intensity, the cross-section of the magnetic circuit, and the magnetic permeability of the magnetic circuit. Thus, increase of the magnetic permeability, the cross-section of the magnetic circuit, and the magnetic inductivity of magnetic circuit can increase induced voltage. In addition, an increase ~~of moving speed in the rate of movement~~ of the magnet can increase the magnetic flux change.

Page 6, lines 9-20 have been amended as follows:

In the first preferred embodiment, ~~a moving the~~ distance of movement of the float 4 will be equal to that of the magnet 1 in [[one]] upward or downward movement if there is no provision of the lever 5. Fortunately as devised by the present invention, ~~a moving the~~ distance of movement of the magnet 1 is larger greater than that of the float 4 in [[one]] upward or downward movement since the distance from the magnet 1 to the fulcrum 6 is larger greater than the distance from the float 4 to the fulcrum 6 as taught by leverage. Accordingly, the magnetic flux change in the magnetic circuit can be increased significantly. Likewise, in the second preferred embodiment, ~~a the~~ distance from the driving shaft 11 to the magnet 1 at the top of the vibration member 10 is larger greater than ~~a the~~ distance from the driving shaft 11 to ~~a the~~ bottom of the vibration member 10 as devised by the present invention. This [[can]] also increases increase a moving speed the amount of movement of the magnet 1 and thus increases increase the magnetic flux change in the magnetic circuit.

Page 6, line 21 through page 7, line 6 have been amended as follows:

Additionally, the induced voltage will be smaller if the electric coils 3 are not wound on the stator cores 2 since the magnetic permeability of air is very small. Fortunately, the induced voltage will be very large since the stator core 2 has a high magnetic permeability as embodied in each of the first and second preferred embodiments. In a case that there is only one pair of magnet 1 and stator core 2, no line of magnetic flux will be cut when the magnet 1 leaves the effective magnetic area of the stator core 2. That is, the magnetic flux is not changed and thus there is no induced voltage. This is not desirable. Thus, as stated above, a plurality of parallel sets of stator cores 2 and electric coils 3 are provided by the present invention in which each of the plurality of barriers 8 is disposed between two adjacent stator cores 2. Hence, the magnetic flux change can be increased significantly. Preferably, ~~a~~ the cross-section of the magnet 1 is about the same as that of the stator core 2 so as to obtain ~~a~~ the maximum magnetic flux change in operation.

Page 7, lines 7-13 have been amended as follows:

A small voltage will be induced if the magnet 1 is a permanent magnet due to smaller magnetic intensity. Fortunately, referring to FIG. 5, as embodied by the present invention, the magnet 1 is formed of the same ferromagnetic material as the stator core 2 with the magnetic field around each of the stator cores 2 [[is]] generated by another electric coil 31 wound thereon. The coil 31 is in turn electrically coupled to an external power source 12. As a result, the induced voltage is greatly increased due to the larger magnetic flux change.

Page 7, lines 14-17 have been amended as follows:

As to the problem of unstable electricity generated by ~~an~~ ocean wave energy conversion process as experienced in the prior art, it can be solved by many commercially available, advanced power electronic devices. This is similar to those used in connection with wind turbine electricity production.